CLAIMS in FWC of Serial No. 07/511,951

1 20. A track lighting system comprising:

a source providing a low-frequency AC voltage at a pair of power line terminals; the low-frequency AC voltage having a fundamental period consisting of two half-periods;

a power track having a pair of track conductors as well as a receptacle slot operable to receive and hold track lighting units with socket terminals operative to make electrical contact with the track conductors; and

voltage conditioning means connected between the power line terminals and the track conductors; the voltage conditioning means being operative, but only during a part of each half-period, to provide a high-frequency AC voltage to the track conductors; the fundamental frequency of the high-frequency AC voltage being substantially higher than that of the low-frequency AC voltage; all during said part of each half-period, the instantaneous absolute magnitude of the high-frequency AC voltage being substantially equal to half that of the low-frequency AC voltage;

whereby the RMS magnitude of the high-frequency AC voltage is less than half that of the low-frequency AC voltage.

2 21. The track lighting system of claim 20 wherein the voltage conditioning means includes a full-wave rectifier means as well as a half-bridge inverter means.

3 22. The track lighting system of claim 20 wherein the magnitude of the low-frequency AC voltage is about 277 Volt RMS and the magnitude of the high-frequency AC voltage is about 120 Volt RMS.

4 23. The track lighting system of claim 20 wherein, during said part of each half-cycle, intermittent periodic ohmic contact is made between one of the power line terminals and one of the track conductors.

5 24. The track lighting system of claim 20 wherein, during said part of each half-cycle, current may flow directly between one of the power line terminals and one of the track conductors.

6 25. The track lighting system of claim 20 wherein the waveform of the high-frequency AC voltage is squarewave.

7 ~~26~~. A track lighting system comprising:

a source providing a low-frequency AC voltage at a pair of power line terminals;

a power track having a pair of track conductors as well as a receptacle slot operable to receive and hold track lighting units with socket terminals operative to make electrical contact with the track conductors; and

voltage conditioning means connected between the power line terminals and the track conductors; the voltage conditioning means being operative to provide a high-frequency AC voltage to the track conductors; the fundamental frequency of the high-frequency AC voltage being very much higher than that of the low-frequency AC voltage; the high-frequency AC voltage being amplitude-modulated, thereby varying periodically between being of a relatively low magnitude and being of a relatively high magnitude; the relatively high magnitude being several times larger than the relatively low magnitude.

8 ~~27~~. The track lighting system of claim 7 wherein the high-frequency AC voltage is a squarewave voltage.

9 ~~28~~. The track lighting system of claim 7 wherein, during at least a part of each fundamental period of the low-frequency AC voltage, intermittent periodic ohmic contact is made between one of the power line terminals and one of the track conductors.

10 ~~29~~. The track lighting system of claim 7 wherein, during at least a part of each fundamental period ~~of the~~ low-frequency AC voltage, current flows directly between one of the power line terminals and one of the track conductors.

11 ~~30~~. The track lighting system of claim 7 wherein: (i) a track lighting unit is indeed connected with the track conductors: (ii) the voltage conditioner means includes a full-bridge reactifier connected directly with the power line terminals; and (iii) the voltage conditioner means draws power from the power line terminals with a power factor about equal to or higher than 80%.

12 ~~31~~. The track lighting system of claim 7 wherein the high-frequency AC voltage is 100% amplitude-modulated.

13 ~~32~~. The track lighting system of claim 12 wherein the high-frequency AC voltage is amplitude-modulated at a frequency equal to twice the frequency of the low-frequency AC voltage.

14 33. A track lighting system comprising:

a source providing a low-frequency AC voltage at a pair of power line terminals;

a power track having a pair of track conductors as well as a receptacle slot operable to receive and hold track lighting units with socket terminals operative to make electrical contact with the track conductors; and

voltage conditioning means connected between the power line terminals and the track conductors; the voltage conditioning means including a full-bridge rectifier and an inverter means; the full-bridge rectifier being connected directly with the power line terminals and being operative to supply rectified unfiltered low-frequency AC voltage to the inverter means; the voltage conditioning means being operative:

(i) to provide an amplitude modulated high-frequency AC voltage to the track conductors; the fundamental frequency of the high-frequency AC voltage being very much higher than that of the low-frequency AC voltage;

(ii) to power track lighting units connected with the track conductors; and

(iii) to draw power from the power line terminals with a power factor of at least 80%.

15 34. The track lighting system of claim 14 wherein the inverter means includes a half-bridge inverter.

16 35. The track lighting system of claim 14 wherein the high-frequency AC voltage is a squarewave voltage.

17 36. A track lighting system comprising:

a source providing a low-frequency AC voltage at a pair of power line terminals;

a power track having a pair of track conductors as well as a receptacle slot operable to receive and hold track lighting units with socket terminals operative to make electrical contact with the track conductors; and

voltage conditioning means connected between the power line terminals and the track conductors; the voltage conditioning means being operative to provide an amplitude modulated high-frequency squarewave voltage to the track conductors; the fundamental frequency of the high-frequency squarewave voltage being substantially higher than that of the low-frequency AC voltage.

37. The track lighting system of claim 36 wherein the high-frequency squarewave voltage is amplitude-modulated.